

IN THE CLAIMS

1. (Currently amended) A top-pumped optical thin film device comprising:
a substrate;
a lower cladding layer formed on the substrate;
a gain medium structure formed on the lower cladding layer and excited by absorbing pumping light; and
a light source disposed above the gain medium structure for pumping the gain medium structure by means of pump light transmitted downward from the light source external to a waveguide on the substrate directed downward therefrom,
wherein a portion of the gain medium structure, which is included in a beam spot of the light source, has a larger area than other portions of the gain medium structure.
2. (Original) The top-pumped optical device as set forth in claim 1, further comprising an upper cladding layer formed on the gain medium structure,
wherein the upper cladding layer is made of a material which transmits the light irradiated from the pumping light source.
3. (Original) The top-pumped optical device as set forth in claim 1,
wherein the gain medium structure does not exhibit great absorption property in a signal wavelength band of the optical device, but exhibits great absorption property in other wavelength bands.
4. (Previously presented) The top-pumped optical device as set forth in claim 3,
wherein the gain medium is made of one selected from the group consisting of a macromolecular substance doped with excited elements and nano-crystals, a silica-based substance doped with excited elements and nano-crystals, a chalcogenide glass substance doped with excited elements, and a GaN or GaN-based substance doped with excited elements.
5. (Cancelled)

6. (Previously presented) The top-pumped optical device as set forth in claim 4, wherein the excited elements are rare-earth elements.

7. (Original) The top-pumped optical device as set forth in claim 1, wherein the pumping light source is a LED.

8. (Original) The top-pumped optical device as set forth in claim 1, wherein the gain medium structure includes adiabatic portions between the portion having the larger area and other portions.

9. (Original) The top-pumped optical device as set forth in claim 1, wherein the pumping light source contacts a top surface of the upper cladding layer.

10. (Currently Amended) A top-pumped optical thin film device comprising:
a substrate;
a lower cladding layer formed on the substrate;
a gain medium structure formed on the lower cladding layer and excited by absorbing pumping light;
a light source disposed above the gain medium structure for pumping the gain medium structure by means of pumping light directed downward therefrom,
wherein the pumping light is directed downward using no waveguide on the substrate,
wherein a portion of the gain medium structure, which is included in a beam spot of the light source, has a larger area than other portions of the gain medium structure, and
wherein the gain medium is made of a silica-based substance doped with rare-earth elements and nano-crystals.

11. (New) The top-pumped optical thin film device as set forth in claim 1, wherein the larger area of the gain medium structure is horizontal and the pump light is transmitted vertically downward from the light source